Physical Activity of Urban Adult Population: Questionnaire Study

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Aim. To assess the level of physical activity of an urban population according to gender, age, smoking, and educational differences.

Methods. The sample comprised 594 men and women living and working in Zagreb, Croatia. Work, sport, and leisure-time activity indices were obtained by the Baecke's questionnaire. Significance of differences was tested by the Student's t-test. The relation between the indices and the education was determined by correlation analysis.

Results. Women had lower work and sport indices score, and higher leisure-time activity index. After the age of 50, women participated significantly more in sport activities than men. There was a negative correlation between the education and the work index, and a significantly positive correlation between the educational level and the sport activity index, regardless of gender and age. Women smokers participated to a significantly lesser extent in sport activities than women non-smokers. Such differences were not observed in men.

Conclusion. People with lower educational level sustain more work load at their jobs than those with higher education. More educated people participated more in sport activities, although leisure-time activity is not significantly related to education. In women, participation in sport activity is negatively correlated with the smoking habit.

Key words: adult; Croatia; educational status; exercise; leisure activities; physical fitness; urban health; workload

The habitual physical activity level of individuals within a particular population varies to a large extent (1-7). It depends on a whole series of factors, such as age, gender, health status, cultural and biological heritage, and socio-economic relations (5).

There is a large number of well-documented studies on the relationship between the level of physical exercising and health (1,3,5,8,9). Also, there are numerous methods for assessing the level of habitual physical activity (10-13), including a whole range of questionnaires that apply various techniques in order to help the examinee answer the questions regarding duration, intensity, and frequency of his or her physical activity (6,10,13,17). Self-reported physical activity questionnaires (11,13,16,17,19) have been thoroughly investigated, analyzed, and evaluated in respect to measuring both the rectangular and the circular validity indicators of aerobic capacity, body fat, and energy expenditure, and activity recording (1,11,14,24,25). One of the possible classifications of levels of physical activity recognizes the following activity types: sleeping, light, moderate, and severe; time activity, household chores, and occupational activity (19). The questions directed to wards onetypedo not give any data about the other. No questionnaire can offer the analysis of all types of physical activity (19). An example of a well-constructed questionnaire, which carefully analyzes the most frequent types of light physical activity, is the Baecke's questionnaire (6). This questionnaire allows the determination of the total result of a physical activity, occupational activity, sport activity during leisure time, and leisure-time activity excluding sport. The Baecke's questionnaire showed a high correlation with energy expenditure, as measured by the double labeled water method (25). Because of its simplicity, it is highly recommended in large-scale studies.

The objective of this research was to determine, by the use of Baecke's questionnaire (6), the ability of individuals to perform physical activity at work, sport activities during leisure time, and leisure-time activities excluding sport in the urban population. The hypothesis of this study was that the levels of physical activity and its relation to individual educational level and smoking habit vary according to gender and age. This is the first study that investigated physical activity, physical load at work, and activity during leisure time in Croatian population with respect to age, gender, education, and smoking habit. The aim of the study was to determine which population groups are at risk for activity-related health problems.
Subiects and Methods

The sample comprised 594 (298 men and 296 women) employed adults, 20–65 years of age, residents of Zagreb, the capital of the Republic of Croatia. The subjects were randomly selected by general practitioners who were asked to send a letter of invitation every registered employed patient aged between 20 and 65. One fifth of the candidates agreed to participate in the study and came to the testing site at the exact time and day. Most of the invited subjects who did not come excused themselves by their previously scheduled obligations or current health problems. The study was done in April and May 1999.

The subjects, both smokers and non-smokers (Table 1), came from different educational backgrounds. All were tested with the Baecke questionnaire (6) to assess the level of the habitual physical activity. The questionnaire was composed of 16 items checking the physical work load, load during sport activity, and load during leisure time. Three basic indices were calculated from the results of this questionnaire: work index (WI), sport index (SI), and leisure-time index (LI).

The significance of the obtained differences was checked by means of t-test (or by the U-test in case of non-normal distribution). The relationship between physical activity indices and the level of education were determined by correlation analysis.

Results

Men displayed significantly higher levels of both physical activity at work and sport activity during leisure time, whereas women were significantly more active only in leisure activities (Table 2). In men aged 35-40 years, the work index was lower than in men after the age of 40 (2.62 ± 0.72 vs. 2.89 ± 0.72; p = 0.032). After that age, the work index remained stable in all monitored age groups (Fig. 1).

In women, the values of work index significantly decreased during the fifth life decade if compared with the fourth life decade (2.48 ± 0.77 vs. 2.66 ± 0.76; p = 0.012), and slightly increased in the sixth decade (Fig. 1). Significantly higher values of this index were found in men than in women aged 41-50 years (2.85 ± 0.75 vs. 2.48 ± 0.77; p < 0.001).

The value of sport index was maintained in men during adulthood until the beginning of the sixth life decade, when it decreased. In women, this index displayed the lowest values during the first half of the fifth life decade to gradually increase later on. Although the level of sport activity in men and women did not significantly differ before the age of 35, after that age men were significantly more active until the beginning of the sixth decade of life (Table 3).

Dividing the subjects into two groups, one under and the other over 45 years of age, the results showed statistically significant differences in physical activity indices with respect to the educational level.

The work index showed statistically significant decrease with the increase in education level in both men and women and both age groups. In younger men (<45), physi cal activity levels were higher than in women aged 41-50 years (2.21 ± 0.61 vs. 2.41 ± 0.68; p < 0.001). In older men (≥50), the values were similar to the ones found in women aged 41-50 years (2.21 ± 0.61 vs. 2.66 ± 0.89; p = 0.021).

Table 1. No. (%) of men and women in the study sample with respect to age, educational level, and smoking characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Men (n=298)</th>
<th>Women (n=296)</th>
<th>p*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;35</td>
<td>67 (22.5)</td>
<td>38 (12.8)</td>
<td>0.002</td>
</tr>
<tr>
<td>35-40</td>
<td>62 (20.8)</td>
<td>38 (12.8)</td>
<td>0.010</td>
</tr>
<tr>
<td>41-45</td>
<td>53 (17.8)</td>
<td>98 (33.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>46-50</td>
<td>48 (16.1)</td>
<td>86 (29.1)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>≥50</td>
<td>68 (22.8)</td>
<td>36 (12.2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>primary</td>
<td>37 (12.4)</td>
<td>91 (30.7)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>secondary</td>
<td>204 (68.4)</td>
<td>130 (43.9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>higher</td>
<td>57 (19.2)</td>
<td>75 (25.4)</td>
<td>0.078</td>
</tr>
<tr>
<td>Smoking status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>non-smokers</td>
<td>198 (66.4)</td>
<td>197 (66.6)</td>
<td>0.796</td>
</tr>
<tr>
<td>smokers</td>
<td>100 (33.6)</td>
<td>99 (33.4)</td>
<td>0.796</td>
</tr>
</tbody>
</table>

*Two-tailed t-test.
the index decreased from 3.64±0.78 in subjects with elementary school education to 2.23±0.78 in subjects with a university degree (p<0.001). In the group over 45 years of age, a similar decrease in work index was noted (from 3.58±0.95 in subjects with elementary school education, to 2.06±0.78 in subjects with an academic degree; p<0.001). In women under 45 years of age, work index decreased from 2.89±0.75 to 2.16±0.82 (p=0.003) with the increase in educational level, whereas in women over 45 years of age, it decreased more obviously from 3.07±0.91 to 2.21±0.76 (p<0.001), as expected.

Quite the opposite changes were ob served in sport activity index, which increased directly with the level of education. These differences were more significant in younger women and men. In younger men, it increased with education from 2.23±0.73 to 2.67±0.87 (p=0.002), and in younger women from 2.02±0.72 to 2.25±0.78 (p=0.014). In older men with the lowest educational level, sport activity index was significantly lower than in the younger group of the same educational level (2.02 vs. 2.23; p=0.024).

The leisure-time activity level in all men and younger women showed lower values in the examinees with a higher level of education than in those with a lower level of education. The differences, however, were not statistically significant. Women over 45 years of age achieved similar results in the leisure-time activity index.

Same age categories were used to produce the correlation matrix of activity indices and education level (Table 4). Significantly negative correlation between the work index and the education level was observed. A significantly positive correlation between sport activity index and the education level was observed in both genders and both age groups. A significant correlation between leisure-time activities, excluding sport, and the educational level was found only in younger men.

Men, both the smokers and the non-smokers, did not show any significant differences as far as the activity index was concerned, whereas the women who did not smoke had significantly higher sport indices than the ones who smoked (Table 5).

**Discussion**

Our study revealed that there is increase of the sport activity in women over 50 years of age. It could be explained by the fact that, at that age, they had more free time and that they took more care about their health, becoming aware of the beneficial effects of physical exercise, as well as being afraid of the effects of the menopause on their musculoskeletal system.

Significant differences in sport index between genders were observed in all age groups, except in the youngest age group (under 35), probably because there was a large number of women in that group who did not have children (55%) or had just one child (another 20%) which made easier for them to participate in sport activities during leisure time. In older age groups, women had more children, which meant more obligations at home. Only after the age of 45, and especially after the age of 50, the latter group tended to participate in more sport activities.

Engström et al. (26) researched the Swedish population and observed that women up to the 60 years of age participated more in moderate sport activities than men. However, they reported that the intensity and extent of exercising, the smaller percentage of women participating in that activity.

The lower values of work index in younger men could probably be ascribed to the fact that they could not commit their working tasks easily. High negative correlation between the education level and work index could be ascribable to less physical load on working places designed for highly educated people, meaning that there was more desk job and less physical work. The finding was congruent with the results of Baekke et al. (6).

The intensity of the sport activity in men decreased with their age, especially after 50 years of age. Still, in all subjects with a university degree (p<0.001). In the group over 45 years of age, a similar decrease in work index was noted (from 3.58±0.95 in subjects with elementary school education, to 2.06±0.78 in subjects with an academic degree; p<0.001). In women under 45 years of age, work index decreased from 2.89±0.75 to 2.16±0.82 (p=0.003) with the increase in educational level, whereas in women over 45 years of age, it decreased more obviously from 3.07±0.91 to 2.21±0.76 (p<0.001), as expected.

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age groups men had higher sport activity index than women, except in a group over 50. Apparently, men after 50 loose interest in doing sport during leisure time.

The leisure-time index comprised all the activities in free time except sport activity. Higher values of leisure time in dex for women should mostly be attributed to housekeeping. The lack of differences according to the educational level points out that, except for the sport activity, all the subjects spend their free time in a more or less the same way. The only exceptions were younger men in whom a weak, but still significant negative relation between the level of education and leisure-time index was revealed.

The analysis of data on smoking habits showed that 1/3 of the examinees, both men and women, were addicted to smoking. A significant higher sport index in women non-smokers showed a higher responsibility level towards health-related physical activity, whereas those differences were not observed in men. A reason for that may be the fact that women exercise more because of their health and beauty. Women who are aware of benefits of exercise are also more likely aware of the risks of smoking. On the other hand, men who exercise because of the social aspects connected with it, but sometimes for medical reasons, also. Similar results on participation of smokers in physical activities were obtained in the research by French et al. (27).

The study of the Finnish population (28) also showed that people with lower educational levels exercised less. In their opinion, health promotion programs regarding physical activity should pay special attention to people in a lower socio-economic position.

In conclusion, our study showed a significant difference in the levels of all examined dimensions of habitual physical activity. The value of both work in-index and sport activity in dex were lower in women than in men. The values of the leisure-time activity in dex were higher in women than in men. The study also showed a strong tendency to wards a healthier lifestyle among urban female population over 50 years of age. The results of the study did not differ much from the results of the studies performed in Sweden, Finland, and USA. Those studies, as well as this one, underline the need for directed promotion of physical activity to the less educated part of population as well as to the smokrs.

Acknowledgment

The study was a part of the Eurofit-Croatia project (034-001) and financed by the Croatian Ministry of Science and Technology.

References


Received: March 17, 2000
Accepted: September 11, 2000

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